



A U.S. Department of Defense Information Analysis Center (IAC) sponsored by the Defense Technical Information Center (DTIC)

SMART SENSOR SYSTEMS TO SUCCESSFULLY COUNTER CBW PROLIFERATION

By Dr. Mildred Donlon

The Counterproliferation Support Program (CPSP) was established in 1994 by the Counterproliferation Program Review Committee (CPRC) to address DoD shortfalls in chemical and biological warfare (CBW) counterproliferation capabilities. The CPRC, managed by the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs) (ATSD (NCB)), uses its budget to leverage DoD acquisition programs to meet the counterproliferation priorities of the Commander-in-Chiefs (CINCs) and accelerate the development of enhanced capabilities to the field. Three technology success stories supported by CPSP and managed by the Defense Advanced Research Projects Agency (DARPA) are presented below. The CPSP support was the essential component for accelerating these technologies to the field.

SURFACE ACOUSTIC WAVE SMART SENSOR SYSTEM



The newest Surface Acoustic Wave (SAW) sensor system, the SAWRHINO (Rhino for "nose") showing the size of the SAW device in the dual 3-SAW sensor array.

Chemical sensor systems based on Surface Acoustic Wave (SAW) technology are strong contenders for real-time detecting and identifying of toxic organic vapors. A number of prototype SAW sensor systems have been developed at the Naval Research Laboratory (NRL) over the past 10 plus years. The recent DARPA/CPSP supported program has produced sensor systems that can now distinguish between blister agents and individual nerve agents at trace levels. SAW systems have been deployed in Korea, flown in a Pioneer Unmanned Aerial Vehicle (UAV), and are being tested and evaluated by the Army and Marine Corps. The Joint Chemical Agent Detector (JCAD) Working Group is considering the SAW technology as one of the promising technologies (along with the Ion Mobility Spectrometer [IMS] technology) that could meet their requirements.



View of the interior of the SAWRHINO: Preconcentrator, dual 3-SAW sensor arrays, pumps, valves, etc.

The key features of the SAW sensor system are dual arrays of SAW devices (3, 4 or 6) coated with specific polymer coatings,

temperature controller for the SAW devices, an automated sampling system including thermally-desorbed preconcentrator tubes, computer capability for pattern recognition algorithms to analyze the sensor data and control pumps and valves. The SAW sensor system responds to organic vapors rapidly, reversibly, and reproducibly by the specific interactions of the vapors with the absorbent coatings on the SAW devices. The pattern of the interactions with the individual coatings (3, 4 or 6 different coatings) is measured by changes in the SAW frequencies, and is the basis for identifying the vapor challenge.

THE FIBER OPTIC BIOSENSOR FOR BIOLOGICAL WARFARE DEFENSE

In 1994 DARPA funded the NRL, along with a small business, Research International (RI), to miniaturize NRL's fiber optic

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Contract Awards

1. **Chemical Protective Overgarments.**
Creative Apparel Associates
Belfast, ME
\$26,067,542. May 1997
By Marine Corps Systems Command,
Quantico, VA.
2. **Indoor Chemical Decontamination at
the Army Research Laboratory.**
Roy F. Weston Inc.
Manchester, NH
\$5,559,512. 15 May 1997
By U.S. Army Corps of Engineers,
Waltham, MA.
3. **Program Management for
Environmental Restoration of
Rocky Mountain Arsenal.**
Foster Wheeler Environmental Corp.
Lakewood, CO.
\$1,200,000,000. 23 May 1997
By U.S. Army Chemical and Biological
Defense Command
Commerce City, CO.
4. **Construction Contract: General
Instruction and Applied Instruction
Facility for U.S. Army Chemical and
Military Police Schools; Chemical
Decontamination Training Facility.**
Hensel Phelps Construction Co.
Pflugerville, TX
\$160,099,570. 23 May 1997
By U.S. Army Corps of Engineers,
Kansas City, MO.
5. **Field Deployable Environmental
Control Units (FDECU).**
Keco Industries, Inc.
Florence, KY
\$118,055,176. 12 June 1997
By San Antonio Air Logistics Center,
Kelly AFB, TX.



Joseph J. Vervier Retires



On May 1, 1997, a retirement and award ceremony was held for Mr. Joseph J. Vervier, who retired after 35 years of Federal Service. Mr. Vervier served the past seven years as the Technical Director of the Edgewood Research, Development and Engineering Center (ERDEC), U.S. Army Chemical and Biological Defense Command (CBDCOM), Aberdeen Proving Ground (APG), MD.

Starting his Federal career as a physicist, Mr. Vervier rose to the Senior Executive Service rank to become one of the Nation's most influential leaders in the field of chemical and biological defense. Instrumental in the formation of CBDCOM, headquartered in the Edgewood Area of APG, MD, he is also credited with employing innovative management techniques at ERDEC which resulted in a team-based, integrated product structure that is now recognized as a model organization in the Army.

Mr. Vervier has received the Army Decoration for Exceptional Civilian Service, the highest honorary award granted to a civilian employee by the Secretary of the Army. He has also been the recipient of the Army Meritorious Civilian Service Award, the Commander's Award for Civilian Service, the Lieutenant General Levin Hicks Campbell Award, and many others.

Mr. Vervier and his wife, Kathleen are moving to Florida where, "new challenges await, personally and professionally."

The CBIAC wishes Mr. Vervier the best of luck and health in his retirement adventures!

Introducing CBIAC At Crystal City

The CBIAC has a new satellite office, informally dubbed, "CBIAC South", currently residing in one of Battelle's office suites in Crystal City, Virginia. The point of contact for the CBIAC at Crystal City is Mr. Jeff Farr.



All CBIAC products are available through the CBIAC satellite office. The CBIAC South has a wide range of database search capabilities, including the CBIAC Bibliographic Database (CBIAC BD), the Defense Technical Information Center (DTIC) database, Dugway Proving Ground database, and Joint Service Chemical Biological Information System (JSCBIS) database. PATHFINDER database searches are also available through the CBIAC South. Mr. Farr has participated in a PATHFINDER training course at Presearch Incorporated, acquiring the skills to utilize the multiple tools associated with the PATHFINDER database which is user-friendly and provides an automated means of loading, manipulating, and storing large quantities of data from various sources. The CBIAC at Crystal City will also house a document library.

In its initial month, the CBIAC at Crystal City handled inquiries which required interface with DTIC staff and DTIC database searches and downloading of information. Additionally, CBIAC Starter Kits and trifold brochures were distributed.

Mr. Farr can currently be reached at telephone at (703) 413-7839, via fax at (703) 413-8880, or via e-mail at farj@battelle.org. Battelle Crystal City Operations is located at 1725 Jefferson Davis Highway, Suite 600, Arlington, VA 22202-4172.

biosensor and to test the system both for its ability to detect biological warfare (BW) agents and to ascertain that environmental samples would not prevent such detection. NRL and RI produced a 2.5 pound device, the Analyte 2000, capable of analyzing 4 different agents simultaneously with low (ng/ml) sensitivity in five to ten minutes. Tests using coded samples confirmed the ability to detect BW agents and no inhibition of the reaction from air or groundwater samples was evident.

In 1995, DARPA/CPSP envisioned the use of this small sensor for remote detection of BW agents by automating it and mounting it in a small, remotely piloted airplane. In order to accomplish this task, NRL and RI had performed the following tasks: (1) develop an automated fluidics unit to process samples and reagents through the biosensor repeatedly, (2) invent an air sampler that would use the wind from the plane to collect the BW agent into water, (3) convert the Analyte 2000 to a battery operated system, (4) transmit all data in real time to an operator on the ground, and (5) integrate all components into a small, expendable plane. The requirement for a small plane was based on the assumptions that if the system was to be used in a scenario where it was to become contaminated, it would be far safer to destroy it than to try to decontaminate it, and that it needed to be able to fly close to the ground where the risks to a larger, more expensive plane would be unacceptable.

Two planes were selected for the tests. One was a diesel-powered commercially available plane modified to make it more rugged and the other was an electric-powered plane designed and built at NRL specifically for carrying detectors for BW and chemical warfare (CW) agents. Both planes weighed about 40 pounds without fuel or batteries and could carry a 10-pound payload. The payload weight limitation prevented the use of any air sampler requiring either a pump or fan. NRL and RI

each built an air sampler which directed wind into a swirling cyclone of water in order to collect the sample, and the samplers were tested for collection efficiency against existing designs by the Army in the wind tunnel at Aberdeen Proving Ground, MD. As long as wind speeds were above about 40 mph, the collectors operated efficiently. NRL put together an automated fluidics unit from commercially available small pumps and valves and optimized performance parameters. RI built a smaller, more sophisticated fluidics unit based on NRL's performance requirements. Two payloads were developed, each incorporating an air sampler, an automated fluidics unit, the Analyte 2000 biosensor, batteries, and a radio transceiver.

UNMANNED AIR VEHICLE FOR CHEMICAL AND BIOLOGICAL DETECTION

In April 1995, a Pioneer UAV was fitted with a SAW sensor system (SAWCAD developed in the DARPA program) which was adapted to down-link its data in real-time to a ground-based control center. The flight tests were designed to simulate chemical agents delivered by Scud-type missiles and atmosphere detonation. The UAV made several passes through clouds of simulants and in real time, the SAW sensor system identified the presence of the simulant and down-linked the information to the ground center. The SAWCAD flights were the first to use a Measurements and Signatures Intelligence (MASINT) sensor aboard a UAV, and this technology could become an important system to prevent chemical weapons proliferation.

In September 1996, the UAV's with the Fiber Optic Biosensor were flown at Dugway Proving Ground, Utah, and tested for their ability to collect and identify a simulant released into the air. The simulant, a harmless bacteria, was released in an invisible cloud using a crop spray based either in a truck or small plane. The planes flew circles 50-100 feet off the ground about a mile downwind of the release point. The air sampler was run continuously and samples taken for analysis every 5 minutes. Data was radioed to an operator with a



Swallow 1 was built by the Tactical Electronic Warfare Division at NRL. It was the first all electric vehicle to carry the Fiber Optic Biosensor payload to detect biological agents. It was tested in September, 1996 at Dugway Proving Ground, Utah.

laptop on the ground in real time. Once the position of the air intake was optimized for sample collection, the planes were able to collect bacteria, identify it, and radio the identity of the simulant to an operator on the ground. This demonstration was a tour de force in proving the sensitivity of the biosensor and its capability for remote operation. It also demonstrated the feasibility of building BW detection systems into a variety of platforms for remote and early warning of a BW attack.



Dr. Donlon is the Program Manager for the Biological Warfare Defense Program in the Defense Sciences Office of the Defense Advanced Research Projects Agency (DARPA). She manages research programs developing advanced chemical and biological detectors for battlefield, counterproliferation, and intelligence applications. For further information, Dr. Donlon can be contacted at DARPA/ DSO 3701 North Fairfax Drive, Arlington; VA 22203-1714. Her Email address is mildonlon@arpa.mil.

ONGOING AND RECENT ACTIVITIES

Current Awareness and Promotions

• Fran Crimmins attended the first mini-Chemical and Biological Medical Treatment Symposium PMMA-1 (mCB MTS/PMMA-1), May 26-30, 1997, in Hradec Kralove, Czech Republic. The CBIAC, a co-sponsor of the symposium, participated in the technical discussions. Details can be found in Meeting Highlights, page 8.

• Linda Citta attended the 14th International Harardous Materials Response Teams Conference: Nuclear, Biological and Chemical Problems as They Relate to Terrorism, May 29 - June 1, 1997, in Towson, MD. See Meeting Highlights, page 8.

• Jeanne Rosser attended the Defense Special Weapons Agency's (DSWA) 6th Annual International Conference on Controlling Arms, June 2-5, 1997, in Norfolk, VA. The CBIAC presented a display highlighting DSWA Technical Area Tasks in support of Arms Control programs. For further information, see Meeting Highlights, page 8.

• Fran Crimmins attended the Worldwide Chemical Conference (WWCC) XV, June 25-27, 1997, at Fort McClellan, AL. The CBIAC display featured the latest CBIAC products and services.

• The CBIAC is co-sponsoring the Federal Emergency Management Agency (FEMA) Workshop, September 22-25, 1997 in Richland, WA. CBIAC products and services will be on display.

• A representative from the CBIAC will be attending the Scientific and Technical Information (STINFO) Program 1997 Training Conference and Workshop, September 24-26, 1997 in Wheeling, West Virginia. The CBIAC is planning to present a display featuring the restructured CBIAC Bibliographic Database (CBIAC BD) and our latest informational products and services.

Inquiry and Referral Services

Last quarter, the CBIAC responded to 189 inquiries. 15 percent of the requestors sought information on NBC Survivability while another 13% were seeking informa-

tion on Individual and Collective Protection.

Products

The CBIAC Bibliographic Database (CBIAC BD) is now accessible (with Identification and Password) on the Worldwide Web! Registered users may check out the latest addition to our website at <http://www.cbiac.apgea.army.mil/database/>. See the back cover for details.

Technical Area Tasks

Since the last newsletter, twelve new tasks were awarded, effort was added to fourteen ongoing tasks and eight tasks have been completed. As of 30 June 1997, 126 TATs have been awarded and work has been added to 155 tasks. Total value of TATs awarded is over 48.7 million dollars.

Do not hesitate to contact Judith Shetterly, CBIAC Administrator, if you would like further information on a CBIAC TAT. In order for us to help you most efficiently, please furnish the Government Contract Number you are working on (if any), the reason(s) you want the information, and your company address and phone number. We need this information in order to obtain release of information from the TAT sponsor.

Completed:

Task Description/ Sponsor

- 1 Develop a Comprehensive Source of F-117 Operational Guidance for Pre-Attack Preparations and Post Attack Operations in a CB Environment.
USAF/SM-ALC
- 20 Continue Evaluation of the Feasibility of Field Decontamination of Contaminated Saratoga Garments.
USAF/HSC

- 42 Conduct a Worldwide Literature Search to Identify Sources of Antibodies.
USA/CBDCOM

- 126 Develop and Implement Analytical Methods to Evaluate the Effectiveness of Three MMD-1 Reactor Chemistries for the Destruction of VX, HD and GB.
USA/ERDEC

- 171 Evaluate the Findings of the Library of Congress Gray Literature Processing Task.
DTIC

- 239 Sample and Analyze Government Test Vehicle Surfaces and Components for Possible CB Agents.
USA/TECOM

Underway:

Task Description/Sponsor

- 227 Provide Technical Support to the Joint Service Integration Group.
USA/Chemical School
- 229 Evaluate the Performance of a first Generation, Low Profile Prototype filter for the JSGPM.
USA/ERDEC
- 231 Provide Technical Support for Development of NBC Defense Joint Future Operational capabilities (JFOCS).
USA/Chemical School
- 233 Provide a Risk Assessment for the Transportation of Neat Chemical Research Agents and for RDT&E Dilute Chemical Agents.
USA/ERDEC

See "Ongoing and Recent Activities"

Continued on Page 9

CB NEWS EXCERPTS

In order for the CBIAC to inform its readers of recent Chemical/Biological Defense activity throughout the United States and around the world, we have compiled a list of related CB news



articles and have taken excerpts from them to create brief overviews. Please note that the CBIAC does not provide secondary distribution of articles. We can, however, provide direction on where to find an article of interest.

Rodan, Steve. Nations Confront Terrorism, Defense News, 5-11 May 1997. The United States has decided to join Israel and Turkey in talks about combating threats of regional terrorism and the acquisition of nonconventional weapons of mass destruction by Syria and Iran. Turkey and Israel have been holding periodic talks since the formation in 1996 of a strategic agreement for cooperation between the two states. In addition, discussions will also include details about a joint sea exercise on the Mediterranean, involving Israel, Turkey, and the United States. In an April 3 meeting between U.S. Defense Secretary William Cohen and Yitzhak Mordechai, Cohen's Israeli counterpart, Cohen gave his approval for the three way exercise.

Walsh, Mark. U.S. May Cloud Battlefield With Dust-Sized Spies, Defense News, 19-25 May 1997. In looking to the future, the Defense Advanced Research Projects Agency (DARPA) views electronic dust clouds, microelectromechanical systems (MEMS), as being the eyes for battlefield commanders. These particles are envisioned performing certain airborne tasks such as behaving as chemical agent detectors or even as forward observers and relaying information pertaining to size and location of troop deployment. MEMS are minute particles approximately 1 mm wide and 1 cm long, about the size of a tiny lithium battery, that when combined together form an electronic dust cloud that can perform reconnaissance and detection

tasks. The electronic dust particles can be deployed from a bullet or released from an aircraft, and while descending at approximately 3 cm/sec, the dust cloud could provide intelligence information on troop movements through the use of infrared sensors incorporated into the particles.

GulfLink Address Changed, Search Capability Improved, DefenseLINK News, http://www.dtic.mil/defenseLINK/news//June1997/b06111997_bt307-97.html, 11 June 1997.

GulfLINK, the website for the Department of Defense devoted to the Gulf War illness issues, has a new address, www.gulfink.osd.mil. Individuals using the old address will be directly forwarded to the new GulfLINK address. Since the previous improvements to the website, changes which have gone into effect include the ability to search three engines of choice or to use all three search engines simultaneously. Instructions for advanced searching are available.

USA to Recreate Iraqi CW Blast over Gulf Illness, Jane's Defence Weekly, 7 May 1997. To simulate the detonation of chemical weapons by U.S. troops in 1991 at Khamisiyah, Iraq, the CIA and U.S. Defense Department plan to conduct tests at Dugway Proving Ground, Utah involving the detonation of 122mm rockets. The final results obtained for the open pit tests will be used in several different computer models to give a general picture. To model the absorption rates of chemicals into sand, the CIA obtained samples of sand from the region around Khamisiyah from university archeologists associated with a university in Chicago, IL. The Dugway tests have been criticized by the Presidential Advisory Committee on Gulf War Veterans' Illnesses pertaining to the question of agent release.

Recycling Steel, APG News, 1997 May 21. The effort to recycle empty, steel, ton containers that once held chemical agents is one aspect in the Non-Stockpile Chemical Materiel Program. In the process, the empty ton containers are cut in half and cleaned before they are transported to Rock Island Arsenal, IL, to be recycled for commercial use. The schedule indicates that all smelting and recycling of the ton containers will be completed by the end of the year.

Canada Awards a Contract to Develop a Technology Demonstrator for IPCE

by Dr. W. Stewart Myles



In January 1997, Canada took the first step towards integrating the soldier's protective clothing and equipment by awarding a contract to Computing Devices Canada to develop a technology demonstrator (IPCE TD). The aim is to integrate the dismounted infantryman's protective clothing, equipment and weapons based on a 1995 R&D baseline study which examined Canadian operational requirements for the first decade of the 21st century. The result will be an integrated soldier system that significantly enhances survivability, lethality, mobility, sustainability and command and control communications for the individual soldier. The technology demonstrator is intended to provide the information necessary for a larger capital acquisition project to equip all land forces starting in 2005. More information can be obtained from the Project Director, L Col John Dick (613-995-2177) or the Technology Coordinator, Dr. Ken Ackles (416-635-2098).

Dr. Myles served as the Director at the Defence Research Establishment Suffield (DRES) responsible for the R&D program in Chemical and Biological Defence until his retirement in August, 1996. He is currently a consultant in the area of Chemical and Biological defense. His E-mail address is myles@telusplanet.net

CALENDAR OF EVENTS

The CBIAC highlights conferences, symposia, meetings, exhibitions and workshops of interest to the CB community in every issue of our newsletter. We invite CBIAC users to submit information on various events to the CBIAC, Attention: Ms. Mary Jo Waters or via Internet: watersm@battelle.org. Due to space limitations, the CBIAC will accept submissions on a first-come, first-served basis and reserves the right to reject submissions.

1997 MEETINGS

Date/Name/Location	Contact(s)	Date/Name/Location	Contact(s)
August 12-13, Conference on Countering Biological Terrorism: "Strategic Firepower in the Hands of Many?" Ballston Hilton Arlington, VA	Potomac Institute for Policy Studies 1600 Wilson Blvd., Suite 200 Arlington, VA 22209 Tel: (703) 522-0770 Tel: (703) 522-0299	September 15-17 Combat Vehicles Fort Knox, KY	ADPA/NSIA 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885
August 19 AUSA Army Acquisition Reform Symposium Fairview Park Marriott Hotel Falls Church, VA	Association of the United States Army (AUSA) Attn: Diane Fitzgerald 2425 Wilson Blvd. Arlington, VA 22201 Tel: (703) 841-4300, ext. 661 Fax: (703) 243-2589 URL: http://www.ausa.org/ meetings/calendar.htm E-Mail: dfitzgerald@ausa.org	September 15-17 Emerging Technologies in Hazardous Waste Management IX Pittsburgh Hilton and Towers Pittsburgh, PA	Bram Management 4514 Chamblee Dunwood Rd. Suite 274 Atlanta, GA 30338-6202 Tel: (770) 396-9999 Fax: (770) 396-0092 URL: http://www.chemse. gatech.edu/~iec/ Enviro.html
August 24-27 2 nd International Workshop on CB Detection Ystad Saltsjobad Hotel Ystad, Sweden	FOA NBC Defense Attn: Goran Olofsson or Gerd Karlsson S-901 82 UMEA SWEDEN Tel: 46 90 106 638 (G.O.) or 46 90 106 727 (G.K.) Fax: 46 90 106 803 E-Mail: olofsson@ume.foa.se or gkarlsson@ume.foa.se	September 15-18 Pollution Prevention Fair Aberdeen Proving Ground, MD	ADPA/NSIA 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885
August 24-27 NEMA's 1997 Annual Conference Westin Hotel Boston, MA	National Emergency Management Association (NEMA) P.O. Box 11910 Lexington, KY 40578 Tel: (606) 244-8000 Fax: (606) 244-8239	September 16-19 NBC & Hazard Assessment Conference* Omni Waterside Hotel Norfolk, VA	NBC Conference/KSC Attn: Diane McCune, NBC & HA Conference Mgr. DoD Nuclear Information Analysis Center (DASIAC) 2560 Huntington Ave. Suite 400 Alexandria, VA 22303 Tel: (703) 329-7122 E-Mail: mccune-alex1@ kaman.com
August 24-29 17th International Congress of Biochemistry and Molecular Biology San Francisco, CA	American Society for Biochemistry and Molecular Biology 9650 Rockville Pike Bethesda, MD 20814-3996 Tel: (301) 530-7145 Fax: (301) 571-1824 URL: http://www.faseb.org/IUBMB E-Mail: 17iubmb@asbmb.faseb.org	September 22-25 FEMA Workshop DoubleTree Inn - Hanford House Richland, WA	Federal Emergency Management Agency (FEMA) C/O Pacific Northwest National Laboratory (PNNL) P.O. Box 999, K1 05 Richland, WA 99352 Tel: (800) 806-9790 Fax: (509) 372-4707 URL: http://pnl113.pnl.gov/ fema/femamain.nsf E-Mail: FEMA.Workshop@ pnl.gov
September 2-4, 1997 Equipping, Protecting & Sustaining the Warrior: Advanced Planning Briefing to Industry (Level 1-APBI) Sea Creast Oceanfront Resort and Conference Center North Falmouth, MA	American Defense Preparedness Association ADPA/NSIA Attn: Michelle Bilowich 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885 E-Mail: mbilowich@adpa.org	September 22-25 Amsterdam '97 International Society for Respiration Protection Eighth Conference Krasnapolsky Grand Hotel Amsterdam, Holland	1997 Registration Coordinator ISRP Europe P.O. Box 116 South Ockendon, Essex RM15 6BG England North American POC: Ching-Tsen Bien Tel: (410) 721-3468 Fax: (410) 721-8892
September 10-11 U.S. Naval Inst. Naval Warfare Exposition and Symposium Virginia Beach Convention Ctr. Virginia Beach, VA	J. Spargo and Associates 4400 Fair Lakes Court Fairfax, VA 22033 Tel: (703) 631-6200 Fax: (703) 818-9177		

Date/Name/Location	Contact(s)	Date/Name/Location	Contact(s)
September 23-26 Air Force Scientific and Technical Information (STINFO) Program Training Conference and Workshop: "Evolution to the 21st Century"	Supportability Investment Decision Analysis Center (SIDAC) Attn: Mark Gosett Josie Flanery 5100 Springfield Pike Suite 110 Dayton, OH 45431-1231 Tel: (800) 547-4322 Fax: (937) 254-9575	December 3-5 3rd Annual Strategic Environmental Research and Development Program (SERDP) Symposium	SERDP Support Office c/o HydroGeoLogic, Inc. 1155 Herndon Pkwy., Suite 900 Herndon, VA 20170 Tel: (703) 736-4548 Fax: (703) 736-4500 URL: http://www.hgl.com/serdp/
Oglebay Wheeling, WV		Washington Hilton Hotel Washington, D.C.	
October 3-5 WPS97/5: Multilateral Control Regimes in the 21 st Century: The Impact on Chemical and Biological Weapons	Wilton Park Conferences Attn: Mrs. Heather Ingrey Wiston House, STEYNING BN44 3DZ United Kingdom Tel: 44 (0) 1903 817764 Fax: 44 (0) 1903 815931 E-Mail: wilton@pavilion.co.uk	December 7-10 1997 Winter Simulation Conference	David Withers Tel: (937) 865-1912 Fax: (937) 865-1655 URL: http://www.wintersim.org E-Mail: David.Withers@lexis-nexis.com
Wiston House Conference Center Wilton Park, U.K.		Renaissance Waverly Hotel Atlanta, GA	
October 7-9 Combat Survivability Annual Symposium	ADPA/NSIA 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885	December 7-11 Chemical and Biological Medical Treatment Symposia Series CB MTS Middle East I	The Egyptian Society of Pesticide Hazards (ESPH) and Applied Science and Analysis (ASA) P.O. Box 17533 Portland, Maine 04112-8533 Tel: (207) 829-6376 Fax: (207) 829-3040 URL: http://www.asanlr.com E-Mail: asa@ime.net or 75222.637@compuserve.com
Washington, D.C.		Cairo, Egypt	
October 13-15 AUSA Annual Meeting and Exhibition	AUSA Attn: Diane Fitzgerald 2425 Wilson Blvd. Tel: (703) 841-4300, ext. 661 Fax: (703) 243-2589 URL: http://www.ausa.org/meetings/calendar.htm E-Mail: dfitzgerald@ausa.org		1998 Meetings
Washington, DC		February 8-11 NEMA's Mid-Year Conference	NEMA P.O. Box 11910 Lexington, KY 40578 Tel: (606) 244-8000 Fax: (606) 244-8239
October 21-23 INFOTECH '97 Conference and Exhibition	J. Spargo and Associates 4400 Fair Lakes Court Fairfax, VA 22033 Tel: (703) 631-6200 Fax: (703) 818-9177	Renaissance Mayflower Hotel Washington, DC	
Dayton Convention Center Dayton, OH		May 10-15 The Sixth International Symposium on Protection Against Chemical and Biological Warfare Agents	CBW Protection FOA NBC Defense S-901 82 UMEA SWEDEN For Registration: Tel: 46 90 106 602 E-Mail: molofsson@ume.foa.se For Scientific Program: Tel: 46 90 106 773 Fax: 46 90 106 801 E-Mail: persson@ume.foa.se
October 21-23 Enhancing Aircraft Survivability - A Vulnerability Perspective	ADPA/NSIA Attn: Michele Bilowich 2101 Wilson Blvd., Suite 400 Arlington, VA 22201-3061 Tel: (703) 522-1820 Fax: (703) 522-1885 E-Mail: mbilowich@adpa.org	Stockholm City Conference Center Stockholm, Sweden	
Naval Postgraduate School Monterey, CA		June 2-6 EUROSATORY '98	COGES 64 rue de Ranelagh 75016 Paris France Tel: 33 (0) 1 44 14 58 10 Fax: 33 (0) 1 42 30 70 88 E-Mail: coges@salon-eurosatory.fr In the U.S., contact International Trade Exhibitions in France (ITEF) 2300 Clarendon Blvd, Suite 310 Arlington, VA 22201 Tel: (703) 522-5000 Fax: (703) 522-5005 URL: http://www.salon-eurosatory.fr/anglais/welcome.html
November 3-6 DTIC Annual Users Meeting & Training Conference	Defense Technical Information Center (DTIC) Attn: Julia Foscue 8725 Kingman Road, Suite 0944 Fort Belvoir, VA 22060-6218 Tel: (703) 767-8236 URL: http://www.dtic.mil E-Mail: jfoscue@dtic.mil	Paris-Le Bourget, France	
DoubleTree Hotel Arlington, VA			
November 18-21 Scientific Conference on Chemical and Biological Defense Research	U.S. Army Edgewood Research Development and Engineering Center (ERDEC) Attn: Dottie Berg APG, MD 21010-5423 Tel: (410) 671-4883/4144 DSN: 584-4883/4144 Fax: (410) 671-2649		
CBDCOM Conference Center Aberdeen Proving Ground, MD			

MEETING HIGHLIGHTS

The mini-CB MTS / PMMA I

The first mini-Chemical and Biological Medical Treatment Symposium PMMA-I was held at the Purkyne Military Medical Academy in Hradec Kralove, Czech Republic on 26 - 30 May 1997 and was attended by CBIAC personnel as well as 54 scientists and medical doctors from 21 countries.

The mCB MTS/PMMA-I organization was as follows:

Host, Organizer, Sponsor: Purkyne Military Medical Academy, Hradec Kralove, Czech Republic.

International Organizer and Coordinator Sponsor: Applied Science and Analysis, ASA, U.S.

Institutional and Corporate Co-Sponsors/Supporters: Battelle Memorial Institute and the CBIAC, U.S.; Astra Tech, Sweden; BioDynamics International, BDI, U.S.; Nucleus, Czech Republic; Applied Science and Analysis, ASA, U.S.; Arrow International, Czech Republic; NC-Laboratory Spiez, Switzerland; and Vojenské Stavby, Czech Republic.

Chair: Prof. Jiri Bajgar, PMMA, Czech Republic

Co-Chair: Dr. Barbara Price, ASA, U.S.
Organizer/Coordinator: Col. Richard Price, ASA, U.S.

Science Advisor/Schedule: Dr. Rudolf Portmann, NC-Lab Spiez, Switzerland

The purpose of a mini-CB MTS is to focus on a particular subject or area that falls within the general theme of the CB MTS series. For the PMMA-I, the focus was standardization and, in particular, standardization of cholinesterase measurements. There were several papers describing different methods to measure cholinesterase and the types of errors that might ensue. Dr. Rudolf Portmann (Switzerland) of the NC Laboratories spearheaded the movement for standardized measurements. A major achievement of the mCB MTS/PMMA-I was the agreement in principle by many of the countries represented to participate in a round robin series of tests for acetylcho-

linesterase (AChE) based on a standard method.

All of the interesting and challenging discussions were enhanced with the hospitality of the PMMA and the wonderful social program planned by our hosts and Dr. Bajgar. All left with an appreciation of the challenge of our technical fields and warm feelings of the Czech people and the beauty of the Czech country.

For further information, contact Mr. Richard Price, ASA, P.O. Box 17533, Portland, Maine, 04112-8533. 207 829-6376 or see the ASA Home Page at <http://www.asanltr.com>.

14th International Hazardous Materials Response Teams Conference: Nuclear, Biological and Chemical Problems As They Relate to Terrorism

The Hazardous Materials Committee, International Association of Fire Chiefs sponsored the 14th International Hazardous Materials Response Teams Conference: Nuclear, Biological and Chemical Problems As They Relate to Terrorism May 29-June 1, 1997, at the Sheraton Baltimore North Hotel in Towson, Maryland.



A variety of chemical detectors, both portable and fixed, were on display at the Hazardous Materials Response Team Conference.

The four day event entailed field trips/tours, exhibits, apparatus displays, movies, workshops, and miniature simulations. The field trips/tours were to local chemical and manufacturing companies and to CHEMTREC, the chemical industries centralized information center for emergency responder's inquiries.

The exhibition hall was staffed by numerous vendors displaying a diverse range of hazmat services and equipment from a real-time satellite-linked information system to the latest in personal protective equipment



A decontamination shelter was one of several exhibits demonstrating portable, affordable field equipment.

and portable multichannel hazardous detectors. A wealth of instructional and reference materials were observed at several exhibit booths. Several exhibit representatives provided demonstrations of highly portable and affordable field decontamination and rescue apparatus.

Outside of the hotel, several area emergency response organizations displayed emergency response apparatus and demonstrated their abilities to handle a wide variety of hazardous material emergencies. Included among the demonstrations was an airport crash truck capable of handling magnesium fires and an emergency response truck equipped for handling railroad tanker car incidents.

The workshops, movies, and simulations were too numerous and full of information to summarize in a few brief sentences.



Exhibitor displayed rescue apparatus currently available to hazmat teams. Shown here is a disposable lightweight flexible stretcher.

Topics included Understanding Toxicity, Transportation of Nuclear Materials, "Street Smart" Hazmat, the National Fire Protection Association (NFPA) NBC Task Force Updates, the Threat of Terrorism: Challenges Facing Hazmat Responders, Enhancing Community Responses to Chemical and Biological Terrorist Incidents, and many

See "Meeting Highlights"

Continued on Page 10

Explore New Technologies on the Internet . . . Use Technology Navigator

Technology Navigator is a Defense Technical Information Center-sponsored Web site enabling Government, industry, and academia to better discuss today's technology issues.
<http://www.dtic.mil/technav>



SHARE your research efforts with others — Technology Navigator, a searchable/browsable database, provides an opportunity for industry and academia to share research data and related information on products, studies, findings and pilot programs.

SAVE valuable time — Industry and academia can advertise their latest technology projects and products through Technology Navigator to a global audience electronically.



EXPLORE new technologies — Technologists, project managers, industry experts, and academicians are provided direct access to a wide range of technology issues and potential applications on Information Technology and Measurements and Signatures Technologies.

NETWORK across a global community — Product news, projects, papers, studies, and announcements, can be submitted for review by Government scientists, engineers, and analysts.



Sample Information Technology Topics include:

Automated Warning, Anomaly Detection and Discovery Tools
Collaborative Analysis Tools and Groupware
Data Analysis, Visualization, and Fusion Tools
Data Warehousing, Storage, Retrieval and Dissemination
Geographic Information Systems and Displays
Human-Computer Interface for Information Systems
Information Management and Decision Support
Information Processing and Transformation
Modeling and Simulation for Intelligence Analysis
Multilingual Information Technologies and Translation Support
Multimedia Authoring, Production, and Distribution
Multimedia Storage, Retrieval, and Analysis
Multi-search, Data Mining and Retrieval from Heterogeneous Sources
Object-Oriented Databases and Database Development
Security, Auditing, Records and Copyright Management

Sample Measurements and Signatures Technology Topics include:

Advanced Radio Frequency Sensors
Biological Materials Sensors
Chemical Materials Sensors
Nonimaging Infrared Sensors
Nuclear Materials Sensors
Remote Spectral Sensors
Unattended Sensors



Ongoing and Recent Activities

Continued from page 4

- 240** Provide Technical Support to the USA CBDCOM Domestic CB Preparedness Exercise and Testing Program.
USA/CBDCOM
- 247** Evaluate Regenerable/Cleanable HEPA Filters for the M56 Gas Filter.
USA/ERDEC
- 249** Review, Analyze and Provide Comments as to the Technical Content Accuracy of MICAD Performance Specifications.
USA/CBDCOM
- 252** Provide Technical Support to the Domestic Preparedness Program Director.
USA/CBDCOM
- 255** Provide Technical Support to Set Up and Validate Data Acquisition Hardware and Software in the Respiratory Protection Physiology Laboratory.
USA/ERDEC
- 258** Provide Technical Support to the USA PM-NBCDS During the Transition of MICAD to Initial Production.
USA/PMNBCDS

CBIAC STATISTICS

Total CBIAC documents accessible through DTIC DROLS: 8,564

Shared¹: 4,975 Unique²: 3,589

Total document citations available through the CBIAC BD: 48,721

Total documents added to the CBIAC BD during Third Quarter, FY97: 375

Total documents on site: 27,477

Total inquiries received during Third Quarter, FY97: 189

Technical: 63 Informational: 32
Bibliographic: 85 Referral: 9

Total TATs awarded since contract initiation: 126

Completed: 38 Ongoing: 88
Total newsletter subscribers: 2,423

- 1 Existing DTIC records appended with CBIAC terms
- 2 New DTIC records created by the CBIAC

SELECTED INQUIRY RESPONSES

This section of the newsletter contains recent technical inquiries and responses on subjects we feel are of interest to our users. The information presented has been edited to conserve space. If you would like further detail, please contact Steven Jones at the CBIAC.

Q: What documents and World Wide Web (WWW) sites provided listings of biological threat agents?

A: The following documents provide listings of biological threat agents:

- **Proposals For The Third Review Conference Of The Biological Weapons Convention** (CB-015958, AD-D751873)
- **Germany: Biological Agents Subject To Export Controls** (CB-030276, AD-D754979)

A website which provides a complete listing of materials used in chemical and biological weapons is the Australia Group Export Controls on Materials Used in the Manufacture of Chemical and Biological Weapons, Control List of Dual-Use Chemicals: Commercial and Military Application located at <http://www.acda.gov/factshee/wmd/cw/auslist.htm>

Additional information on biological threat agents can be found in **Beyond VEREX: A Legally Binding Compliance Regime For The Biological and Toxin Weapons Convention** located at <http://www.fas.org/bwc/verex.html>

Q: The CBIAC specializes in informational resources for Chemical and Biological Defense (CBD). Are there any Information Analysis Centers (IACs) that provide similar products and services for other scientific and technical disciplines?

A: There are thirteen contractor-operated Department of Defense (DoD) IACs that are administratively managed and funded by the Defense Technical Information Center (DTIC). Eleven others are managed by other DoD activities. Visit DTIC's IAC website at <http://www.dtic.dla.mil/iac/> for further information regarding all of the IACs. At that website you can also access and download the latest DoD Information Analysis Centers Directory, published in May, 1997. The scope of work, products and services of each IAC are included in the directory.

Editor's Notes:

In the Winter '97 issue of the CBIAC Newsletter, in the Selected Inquiry Responses column on p.11, the Canadian Security and Intelligence Service (CSIS) was cited as the source for obtaining the document, **Chemical and Biological Terrorism: The Threat According to the Open Literature** by Ron Purver. The (1-800) telephone number provided for that organization was for the Ottawa, Ontario area only. Anyone outside that area seeking information about that publication should call the Communication Branch at (613)-231-0100.

CSIS also has a home page on the Internet at <http://www.csis-scrs.gc.ca/index.html>. Select Commentary Series from the menu to access a listing of unclassified intelligence documents published by the Analysis and Production Branch of CSIS. Issue No. 60, also authored by Ron Purver, is entitled, "The Threat of Chemical/Biological Terrorism." The full text of each of the more recent Commentary documents is posted on the website.

In the Recent Acquisitions column of the Spring '97 issue of the CBIAC Newsletter, the publication, **Sea Dumped Chemical Weapons: Aspects, Problems and Solutions** was highlighted. The URL published in that issue for Kluwer Academic Publishers was incorrect. The correct URL is <http://www.wkap.nl/>.

Meeting Highlights

Continued from page 8

others. A training video pertaining to effectively and safely responding to terrorist incidents was previewed, and the viewers were asked for their comments. The attendees received an instructional notebook with workshop material, which was made possible by a grant from the U.S. Department of Transportation, and two handbooks, from the U.S. Army, encompassing chemical and biological casualties.

The Defense Special Weapons Agency's 6th Annual International Conference on Controlling Arms

The Defense Special Weapons Agency's 6th Annual International Conference on Controlling Arms was held on 2-5 June 1997 in Norfolk, Virginia. Over 300 attendees representing U.S. and international governments, industry, and professional and academic organizations gathered to observe and participate in Plenary Sessions, Panel Discussions, and Roundtables which covered the following topics: **Warfighters' Perspectives on Arms Control**; **The Military Role in Implementing Arms Control Agreements**; **Ballistic Missile Defense from Defense Planning and Arms Control Perspectives**; **International Arms Control Technology Efforts**; **The Application of Technology to Regional Arms Control**; **Defense Issues in a World of Fewer Nuclear Weapons**; **The Verification Challenges of Reducing Nuclear Arsenals**; **The Elimination of Chemical and Biological Weapons: Implications for the Military**; and **The Future of Arms Control: Defense by Other Means?** The keynote address was presented by the Honorable John D. Holum, Director of the U.S. Arms Control and Disarmament Agency. Other featured speakers at this international conference included the Honorable Harold P. Smith, Jr., Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs); and Ambassador Robert L. Galluci, Dean of the School of Foreign Service, Georgetown University. Multi-media exhibits covering all aspects of arms control (Nuclear, Chemical, Biological, Conventional, and Cooperative Threat Reduction) were presented by various U.S. Government agencies and contractors.

**DTIC '97
Annual Users Meeting and
Training Conference
November 3-6, 1997**



**Information In The
New Millenium**

The Defense Technical Information Center (DTIC) is presenting its DTIC '97 Annual Users Meeting and Training Conference on 3-6 November 1997 at the DoubleTree Hotel, National Airport, Arlington, Va. The theme of the conference, Information in the New Millennium, reflects DTIC's goal to assist our customer community in meeting tomorrow's challenges by providing the most relevant information in the most appropriate format possible.

This meeting provides an opportunity to explore in detail new developments at DTIC and throughout the federal information network. We are particularly pleased that this year we have as keynote speakers Dr. Charles McClure (School of Information Studies, Syracuse University), Ms. Beth Peters (Copyright Office, Library of Congress) and Mr. Cliff Bernath (Assistant Secretary of Defense, Public Affairs) and exhibitors from other federal agencies as well as from the Department of Defense. All of the presentations will address the most current issues effecting the research, development, and acquisition communities. Not only will these speakers acquaint you with the latest policy and operational developments, but they will also provide you with practical details on valuable and diverse domestic and foreign information resources, security issues, the World Wide Web, copyright and storage and dissemination of electronic documents.

Information in the New Millennium presents exciting new challenges - DTIC '97 promises to provide the tools to expand your horizons to meet these challenges! Check out the conference information on our homepage at <http://www.dtic.mil>. For further information, please contact Ms. Julia Foscue at (703) 767-8236 or by email at jfoscue@dtic.mil.



Chemical and Biological Defense Information Analysis Center



CBIAC
Serving the CB Defense Community

The CBIAC Newsletter is a quarterly publication of the Chemical Warfare/Chemical and Biological Defense Information Analysis Center (CBIAC). The CBIAC is a Department of Defense (DoD) Information Analysis Center (IAC), administratively managed by the Defense Technical Information Center (DTIC) under the DoD IAC Program Office.

Government agencies and private industry under contract to the Department of Defense can contact the CBIAC for informational products and services. The CBIAC serves as the center for the acquisition, compilation, analysis and dissemination of information relevant to chemical warfare and chemical and biological defense technology.

The CBIAC is located in Building E3330, Aberdeen Proving Ground - Edgewood Area, Maryland 21010. For further assistance or information, visit or contact the CBIAC Monday through Friday from 8:00 a.m. to 4:00 p.m., EST:

Mailing address: CBIAC
P.O. Box 196
Gunpowder Branch, APG,
MD 21010-0196

Tel: 410-676-9030 Fax: 410-676-9703
E-Mail: cbiac@battelle.org
URL: <http://www.cbicac.apgea.army.mil/>

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The Contracting Officer's Technical Representative for the CBIAC is Mr. Joseph Williams. He can be reached through his E-Mail address at jdwillia@cbdcom.apgea.army.mil or at the following address:

Technical Director, ERDEC
Attn: SCBRD-RTA (Mr. Joseph Williams)
APG-EA, MD 21010-5423

Access the CBIAC Bibliographic Database Via The Worldwide Web!

The CBIAC Bibliographic Database (BD) is now accessible on the World Wide Web (WWW)! Visit the CBIAC homepage at <http://www.cbiac.apgea.army.mil/> and select the "CBIAC Bibliographic Database (BD)" or access the database directly at <http://www.cbiac.apgea.army.mil:445/>.

If you would like to apply for a user identification and password, select the "Request Form" on our homepage or access the form directly at <http://www.cbiac.apgea.army.mil/request2.html>.

For questions regarding database application, contact Judith Shetterly, CBIAC Administrator.

The screenshot displays a Netscape browser window with the URL <http://www.cbiac.apgea.army.mil/>. The page features the CBIAC logo (Chemical and Biological Defense Information Analysis Center) and a navigation menu on the left. The main content area is titled "All Fields Search Form" and includes a search interface with five input fields, each preceded by a dropdown menu set to "contains the phrase". Each input field is followed by a dropdown menu set to "OR". Below the search fields are "Ok" and "Clear" buttons. At the bottom of the form, there are "Sorted by:" and "Order:" dropdown menus, both currently set to "None" and "Ascend" respectively. The browser's status bar at the bottom indicates "Document: Done".

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